Using MY NASA DATA in the Classroom

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Approach

- Students first worked with the resource activity cards provided by the Globe Program at NASA. These cards allowed the students to see patterns in global temperatures, ice cover, sea surface albedo and other parameters.
- Preston Lewis from NASA visited my classroom and guided the students through one of the lesson plans.
- The students chose a lesson plan and began looking for background information about the subject.
- Anne Martin and Preston Lewis skyped into the classroom for the purpose of answering questions about particular problems the students were having.
- Anne Martin, Preston Lewis and Dr. Jacob Joseph visited the classroom to help the students with interpreting the graphs they made using the downloaded data from the MYNASADATA site.

Above left: Students worked with the Globe Activity cards provided by the MY NASA DATA team at Langley Research Center.
Above right: Preston Lewis and Anne Martin visit the classroom to do a MY NASA DATA lesson plan with students.

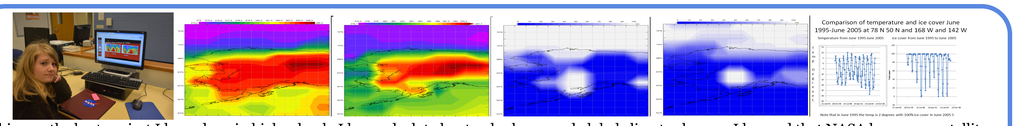
The most memorable and enjoyable activity we completed dealt with the NASA program. The My NASA Data project was the most enjoyable, because we interacted with people from the Langley Research Center. After we presented the power points we received a NASA pin and a certificate. The project dealt with reading advanced graphs and manipulating the data to fit into a graph.

My NASA project was on climate change which was melting the ice. This in return was killing polar bears. Since the ice was melting it made it more difficult to hunt, build a home and stay together. I had a lot of fun doing this project and learned a lot.

When I did my NASA Project, I learned a lot about how much precipitation is available in the atmosphere. It taught me how to read charts and various types of graphs. It showed me that more precipitation drops near the equator than anywhere else.

Rationale

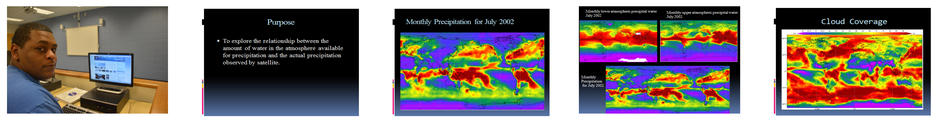
What separates STEM from the traditional science and math education is the blended learning environment and showing students how the scientific method can be applied to everyday life. It teaches students computational thinking and focuses on the real world applications of problem solving. STEM lessons immerse students in hands-on inquiry and open-ended exploration. In STEM lessons, the path to learning is open ended, within constraints such as available materials. The students' work is hands-on and collaborative, and decisions about solutions are student-generated. Students communicate to share ideas and redesign their prototypes as needed. They control their own ideas and design their own investigations.
Most High School STEM Programs are directed toward high achieving students who are interested in STEM studies. These opportunities are not afforded to many capable students . High school students in the state of Virginia are required to have 3 laboratory sciences; Biology and Earth Science are mandatory and the third science is either Chemistry for an advanced diploma or an elective such as the Ecology class. Most students at NKHS taking Ecology are not pursuing an advanced diploma.
Courses and pathways should be available to all students as they prepare for post-secondary education and employment. More emphasis should be on bridging in-school and out-of-school STEM opportunities and skills to the general population of high school students. This project allowed general education students to learn some technology and brought real science to the classroom.



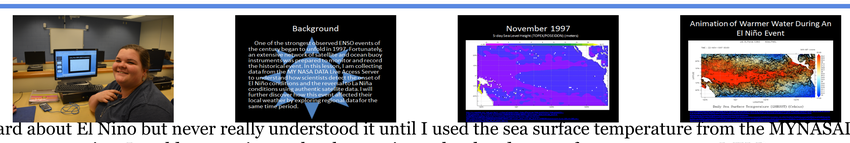
This was the best project I have done in high school. I learned a lot about polar bears and global climate change. I learned that NASA has many satellites and I can access data like temperature and ice cover to make my own decisions about whether climate change is real. My parents do not believe in global climate change and this has helped me explain to them that it is undeniably a big problem in the world today.

I can't believe that I can track aerosols from a volcano across the world. I never understood the grounding of planes when the eruption occurred in Iceland, now I can actually see the path of aerosols as they move with the winds. This can be so useful for me in tracking pollutants across large areas of the world.

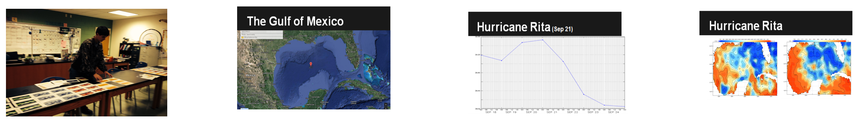
I [illegible] satellites have instruments on them that can measure sea surface temperatures in all parts of the ocean. These satellites can either be geosynchronous or stationary. I also learned to take data from the satellite and put it in graphic form so that I could better see the patterns of seasonal temperatures in the ocean.



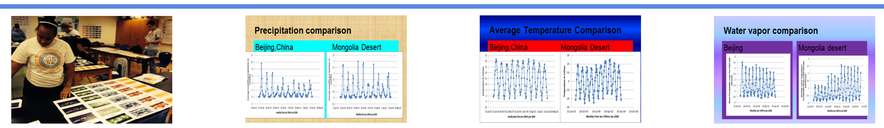
I learned that the precipitable water is all in the lower troposphere. I learned to read satellite data, to locate a position on earth with latitude and longitude and I learned that NASA had data I can look at for a variety of parameters.



I have heard about El Nino but never really understood it until I used the sea surface temperature from the MYNASADATA web site. I could even animate the changes in sea level and sea surface temperature. WILD



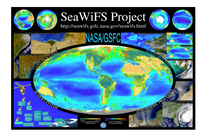
Take a look at this data! You can see that as hurricanes do act as heat engines. This increase in temperature was observed in every hurricane I looked at. It is easy to see how this heat is released as energy.

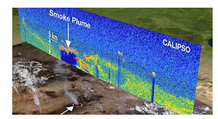


I learned so much from this project I don't know where to start. I learned that I could use real time data from satellites that are in geosynchronous orbit around the earth. I can find temperature, aerosols, water vapor and compare all of these in different parts of the country I will be very busy this summer researching many of the data sets provided by NASA.

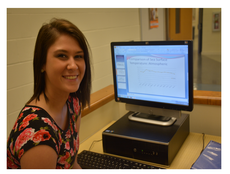
MY NASA DATA
Mentoring and inquirY using NASA Data on Atmospheric and earth science for Teachers and Amateurs

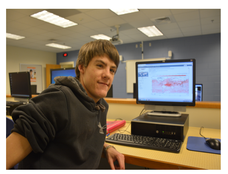
GOALS	To bring NASA data into their classroom and provide students with real-world science experiences To interpret satellite data To use excel to create graphs and charts To interpret the graphs and charts
DELIVERABLES	Five Peer Reviewed Articles about subject student is studying Power point presentation with at least two graphs created from MYNASADATA website Two page paper on students topic area written in APA format
TASKS	Choose a MYNASADATA lesson plan Read the background information that the lesson plan provides. Use AP Scholar or EBSCOhost to access at least 5 articles about subject matter. Student will need to read the articles and take notes. These notes will be turned in for a grade.
SCHEDULE	Wednesdays are designated NASA days Work on how to read satellite data using the resource activity cards. Articles read and notecards prepared for first Skype session Skype with NASA to initiate conversation about student topics. Power point due by May 2





Students Working with MY NASA DATA





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